IsoAid Advantage™ Brachytherapy Kit

⚠ Instructions for Use – This leaflet contains important product use and safety information. Please read carefully and retain these instructions for future reference.

PRODUCT NAME:
ISOAID ADVANTAGE-LOAD® /ADVANTAGE-STRAND® / SECURE STRAND® PD-103 BRACHYTHERAPY KIT

Description:
The Advantage-Load®/Advantage-Strand/Secure-Strand ® Brachytherapy Kit is a pre-sterilized device system containing a stainless-steel needle loaded with Advantage PD-103® seeds in a brachytherapy system configuration. In addition, the Advantage-Load/Advantage-Strand/Secure-Strand Brachytherapy Kit with PD-103 seeds may or may not use suture sleeve strand, absorbable spacers of various sizes The Advantage-Load/Advantage-Strand/Secure-Strand Brachytherapy Kit is intended to be a **permanent implant excluding the stainless-steel needle.**

The ADVANTAGE™ Pd-103 source consists of a laser welded Titanium capsule, containing Palladium-103 absorbed onto four carbon matrix spheres and a silver rod which acts as an x-ray detectable marker: *See Advantage Pd-103 Instructions For Use.*

The Advantage seeds are loaded within a biodegradable (70/30 PLDL) suture-sleeve strand. The suture- sleeve strand resembles a tube. The Advantage-Strand/Secure Strand suture-sleeve encapsulates the Advantage Pd-103 seeds and spacers which is oriented with respect to the dosage plan prepared by the physician specializing in brachytherapy.

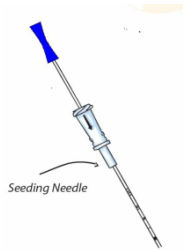
The 18-gauge stainless-steel needle tip(s), measuring 20 cm length, are occluded with bone wax, in order to keep the suture-sleeve strand, seeds, and spacers in place. The spacers are biodegradable, which are made from the exact same material as biodegradable sutures.

The Advantage-Load/Advantage-Strand/Secure-Strand Brachytherapy Kit PD-103 Product may be configured with or without a spacer and/or suture sleeve strand, and supplied in a 20cm stainless-steel needle. The following configurations are loaded into the Advantage Strand PD-103 suture-sleeve strand:

- Advantage Seeds
  and/or:
- with or without a spacer

During the implantation procedure, utilizing the Advantage-Strand/Secure-Strand Brachytherapy Kit, the seeds and spacers provide radiation therapy and location points to aid in the placement of the predetermined suture sleeve strand configuration according to the prescription plan for treatment of the tumor. The verification of the placement to ensure no migration is achieved by the healthcare team's use of the Advantage-Strand/Secure-Strand Brachytherapy Kit takes place at the time of implantation and after implantation, by the use of a gamma probe, ultrasound, and/or similar instruments.

Indications for Use:
The Advantage-Load/Advantage-Strand/Secure-Strand Brachytherapy Kit is intended to be used on individuals for brachytherapy treatment of selected localized tumors that are unresectable, or have low to moderate radio sensitivity. The devices are implanted as a source of nuclear radiation for therapy.



Contraindications:
Do not use non-sterile needles to implant sources.

Physical Characteristics:

Advantage Palladium-103 has a half-life of 16.99 days and decays by electron capture with the emission of characteristic photons and electrons. The principal photon emissions are 20.1 KeV, 20.2 KeV and 22.7 KeV with an average energy of 20.8 KeV. Table 1 shows the decay of Pd-103

Calibration:
ADVANTAGE sources are calibrated by direct comparison against a standard source of the same model that has been calibrated by the National Institute of Standards and Technology for Air Kerma Strength. The resulting calibration is reported in Air Kerma Strength ($\mu Gy\ m^2/h$) as well as Apparent Activity (mCi) on the Technical Data Sheet provided.

ADVANTAGE sources are calibrated to the NIST SK99std WAFAC standards for PD-103 seeds.

Sterilization:
The Advantage-Load/Advantage-Strand/Secure-Strand Brachytherapy Kit is sterilized with a Sterility Assurance Level of 10^{-6} by Ethylene Oxide gas. The sterile packaging has a thirty-one (31) day shelf-life. If the products expiration date has been exceeded the product is considered not sterile and therefore cannot be used. Do not re-sterilize the product. The product is intended to be used on the day of implant specified by the physician. However, should the implant be delayed it may not exceed the expiration date marked on the sterile pack label.

Instructions for Safe Use:
The radioactive seed is introduced via an 18-gauge needle using standard ultrasound or radiography guidance. Once guided to the desired location of the tumor, the suture-sleeve strands, configured by the order of a physician are deployed through the bone wax with the aid of the needle stylet. Ultrasound, MRI and/or radiography confirms the appropriate placement of the seeds.

Radiation Protection & Handling:
The 20 - 23 KeV photons of Pd-103 are substantially absorbed by any high Z material but exhibit desirable penetration in tissue.

Half Value Layer Lead = 0.013 mm
Half Value Layer Tissue = 20.0 mm

Exposure can be reduced by 99.9% with a thin sheet of lead (0.25 mm or 0.01 inch). The shielding of Pd-103 results in a reduction of exposure to attending medical personnel and visitors. Pd-103 sources should be handled only by those individuals trained by an authorizing governmental agency in the safe use & handling of radioisotopes. Direct contact with Pd-103 sources should be avoided. The use of forceps or tweezers is recommended. Proper precautions must be taken when handling the sources. Personnel monitoring is required. Dosimetry monitors, such as TLD devices, should be used to monitor hand and whole-body exposure. During preparation and source implantation procedures, all practical steps should be taken to keep exposure as low as reasonably achievable. Limited exposure time, increasing distance, careful planning of the administration procedure and use of shielded barriers should be considered in meeting this goal

⚠ **Accidental Damage:**
⚠ Do not use the product if there is suspicion that the product is damaged or if the sterile barrier has been breached. It is possible through rough handling (abrasion, incision, etc.), high temperatures or crushing that a seed could rupture and leak. The internal components of the seed are non-toxic, but the area should be closed off immediately and personnel limited to avoid radioactive contamination. The damaged seeds should be placed in a sealed container and the area should be decontaminated. In accordance with radiation regulations only authorized, specialized staff trained in handling radioactive substances may handle the seeds.

Accountability & Disposal:
Records of receipt, storage and disposal of Advantage sources should be maintained in accordance with government regulatory policies. Advantage sources should be strictly controlled and stored in a secured area.

When disposal is indicated, the Advantage sources should be transferred to an authorized radioactive waste disposal agency or returned to IsoAid for disposal. Advantage sources should not be disposed of in normal waste. Any discrepancies must be reported immediately to IsoAid Customer Service.

IsoAid Advantage™ Brachytherapy Kit

Licensing:
USA – State/Federal:

⚠ CAUTION: Federal (USA) and State law(s) restrict this device to sale by or on the order of a physician.

The Florida Department of Health (FDOH), Bureau of Radiation Control has approved this sealed source for distribution to persons licensed pursuant to Florida Administrative Code Chapter 64E-5, "Control of Radiation Hazard Regulations," Part VI or under equivalent licenses of the USNRC or issued by an Agreement State. IsoAid requires proof of USNRC radioactive materials license or respective government license as well as agreement state and licensing state information. Orders cannot be processed without license verification. Compliance with the applicable local, state, country, and/or government regulations concerning procurement, possession, use and disposal of radioactive materials is the responsibility of the customer.

EU

⚠ Use and Distribution in the EU is governed by EURATOM *2013/59 and 1493/93.*

Canada- Canadian Nuclear Safety Commission

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Application of REGDOC-2.12.3, Security of Nuclear Substances: Sealed Sources for typical uses of sealed sources, Brachytherapy - low dose rate is a category 4 source. Category 4 Sources that are very unlikely to permanently injure anyone. However, this amount of unshielded radioactive material, if not safely managed or securely protected, could possibly – although it is unlikely – temporarily injure someone who handled it or was otherwise in contact with it, or who was close to it for a period of many weeks. This Code of Conduct on the Safety and Security of Radioactive Sources was approved by the Board of Governors of the International Atomic Energy Agency (IAEA) on 8 September 2003. It replaces the version published (with the symbol IAEA/CODEOC/2001) by the IAEA in March 2001. It reflects the important findings produced by the International Conference on Security of Radioactive Sources held in Vienna in March 2003 (the Hofburg Conference). Member States to be encouraged to join and effectively implement these Conventions. Canada is already a signatory to these conventions, together with codes of conduct on nonproliferation, research reactors and the safety and security of radioactive sealed sources, along with the Comprehensive Nuclear Test-Ban Treaty.

Canadian Nuclear Safety Commission
280 Slater Street P.O. Box 1046
Station B Ottawa, Ontario K1P 5S9 CANADA
Tel.: 613-995-5894 or 1-800-668-5284 (in Canada only) Facsimile: 613-995-5086 Email: info@cnsc-ccsn.gc.ca
Web site: nuclearsafety.gc.ca

Australia- Australian Radiation Protection and Nuclear Safety Agency

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The establishment of a NRWMF is governed by the National Radioactive Waste Management Act 2012. A NRWMF also needs to adhere to the Environment Protection and Biodiversity Conservation Act 1999, the Nuclear Non-Proliferation (Safeguards) Act 1987 and the Australian Radiation Protection and Nuclear Safety Act 1998.

The proposed National Radioactive Waste Management Facility would be a controlled facility under the Australian Radiation Protection and Nuclear Safety Act 1998 (the Act). Under the Act, licences are required to prepare a site for, construct, or operate a controlled facility. The decision to submit a licence application is a matter for the applicant. Before an application is made to the CEO of ARPANSA for a licence to prepare a site for the National Radioactive Waste Management Facility, the applicant will have to obtain approval from the Minister for the Environment under the Environment Protection and Biodiversity Conservation Act 1999. Before any radioactive material is allowed to be transported it must be packed, shielded, labelled and marked as set out in the ARPANSA Code: Safe Transport of Radioactive Materials. This code is based on the International Atomic Energy Agency's (IAEA) Regulations for Safe Transport of Radioactive Material. nrwmfsupport@arpansa.gov.au; www.arpansa.gov.au.

A radioisotope is considered to be for medical use when it is intended to be:

1. Administered to humans or used for any therapeutic procedure or purpose in any planned exposure of humans to ionising radiation
2. Used in any in vitro medical diagnosis or test
3. Used in research which is either directly or indirectly, related towards medical diagnosis or therapy in humans.

Note: Sealed and unsealed radioactive sources that are used to calibrate instruments in medical practices and pathology laboratories are also included as medical radioisotopes for permit purposes. The applicant/"end user" declares that he/she holds an appropriate licence issued by the relevant Commonwealth, State or Territory radiation regulatory authority to deal with the above radioisotopes. The applicant/"end user" also undertakes not to supply any of the above radioisotopes to an unapproved user. The applicant/ "end user" should contact the relevant Commonwealth, State or Territory radiation regulatory authority for advice on legislative requirements. medicalpermits@arpansa.gov.au www.arpansa.gov.au**.**

ARPANSA, like other regulatory bodies in Australia and abroad, has been working on developing capability in holistic safety. Charged with the function of protecting the health and safety of people under the Australian Radiation Protection and Nuclear Safety Act 1998 (the Act), ARPANSA proposes to use a holistic approach to assess and monitor the safety of licence holders and applicants. These guidelines outline ARPANSA's vision and expectations for holistic safety.

Leak Testing:
ADVANTAGE PD-103 Brachytherapy sources are 100% leak tested prior to shipment and have passed a leak test showing less than 185 Bq (5 nCi) of removable PD-103 surface contamination as required by ISO 9978 "Radiation protection – Sealed radioactive sources." Advantage PD-103 seeds do not require any additional leak testing provided the seeds are used within the use-by-date.

Leak Testing: ADVANTAGE™ Pd-103 sources are leak tested prior to shipment and have passed a leak test showing less than 185 Bq (5 nCi) of removable Pd-103 as required by "Radiation protection – Sealed radioactive sources". ADVANTAGE™ Pd-103 seeds do not require any additional leak testing; provided the seeds are used within the Use By date (Sterile product) and/or Implant/Reference Date (Non-Sterile product).

⚠ Adverse Reactions:

- Any adverse reaction associated with tissue radiation damage may be associated with use of sources. Proper precautions must be taken when handling the sources.
- As with any surgical procedure, complications may occur including: bruising, discomfort, prolonged bleeding, inflammation or infection near the implant site.
- Although the risk of source migration is minimal it can be significantly reduced through the use of stranding that links the seed and spacer together prior to implantation.
- Adverse reactions associated with implant usage in the prostate. Bladder, uterus, anal and colon implant usage have been reported to include irritative uropathy symptoms including increased urinary frequency, urgency, incontinence, and obstruction.
- As brachytherapy sources achieve therapeutic results through radiation, any adverse event associated with tissue radiation damage may be associated with use of Advantage sources.
- Complications have also included cystitis, urethritis, superficial urethral necrosis, hematuria, stricture/contracture, incontinence, proctitis, and impotence, bleeding and discharge, fibrosis and necrosis.
- Seed migration to other parts of the body is possible.
- Allergic reaction to Palladium.

⚠ Precautions:

- Use caution when patients are diagnosed with non-cancerous tumors/lesions.
- Product should remain in leaded pouch until ready for use. Handle lead pouch and contents with care to prevent damage to product.

⚠ Contraindications:

- Do not use Advantage Strand Brachytherapy in neurological or cardiovascular tissues.
- The Advantage Strand Brachytherapy is sold sterile. Use of a non-sterile device may compromise patient care. Do not re-sterilize.
- Caution should be taken when using an MRI to aid in delivery of the seeds. The needles used to deliver the seeds are stainless steel and may affect the quality of the diagnostic information.
- Do not use a damaged seed or a seed that may have become damaged when using the device.
- Do not use bent or broken needle.

- Do not come in direct contact with the Advantage source. Use vacuum or reverse action tweezers to handle the Advantage sources.

⚠ Warnings:

- ⚠ Dispose of radioactive material per nuclear regulatory guidelines (for USA, 10 CFR 35.1000; for EU per EURATOM 1493/93)
- ⚠ Loss of a radioactive seed must be avoided. Protocols must be in place to ensure tracking of the seed throughout the process.
- ⚠ Any attempt to cut or segment stranded product may adversely result in radioactive contamination. Use product as intended.
- ⚠ Do not use if damaged. Discard if damaged during use or after use in accordance with waste disposal procedures.
- ⚠ Do not use if package has any signs of damage. Properly discard package if damaged in accordance with waste disposal procedures.
- ⚠ Do not use when patients are pregnant or breastfeeding. An alternative non-radioactive device should be used to avoid radiation exposure.

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Seeds that have become separated from their host are considered biohazardous and must be contained and disposed of in accordance with standard precautions.

#3033	**Advantage Strand® Brachytherapy Kit**
#3032	**Advantage-Load® Brachytherapy Kit**
#3028	**Secure Strand® Brachytherapy Kit**

	Caution: Consult Accompanying Documents
	Do Not Reuse
	Consult Instructions for Use
STERILE EO	Ethylene Oxide Sterilization
	Use by Date

REF	Catalog Number
	Do not Resterilize
	Date of Manufacture
	Biohazard
	Radioactive
	Do not use if package is damaged

Manufacturer:
IsoAid LLC
7824 Clark Moody Blvd
Port Richey, Florida 34668
United States of America
Ph: +1-727-815-3262